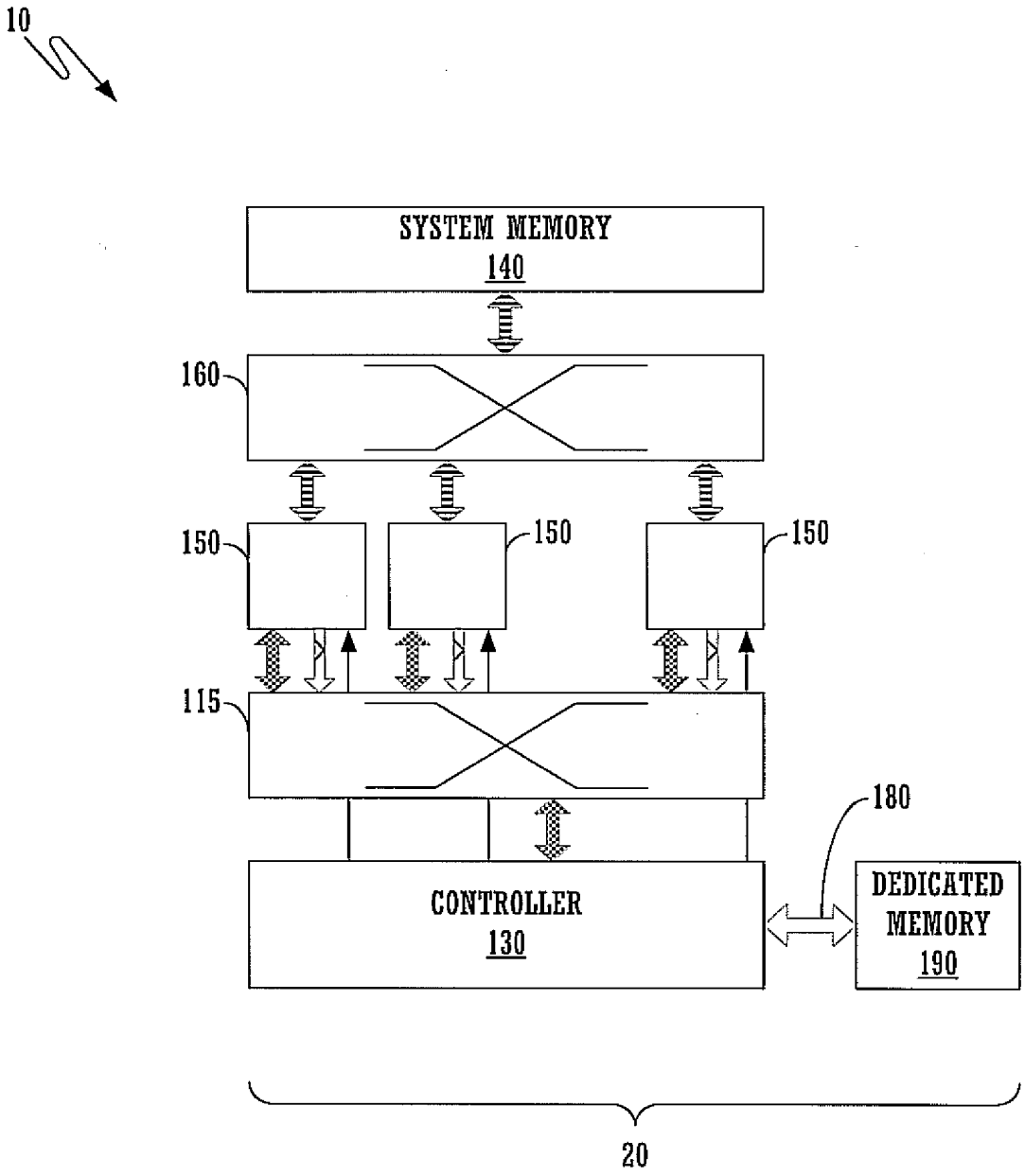
10
SYSTEM MEMORY
140
160
150
150
150
115
180
CONTROLLER
130
DEDICATED
MEMORY
190
20

FIGURE 1

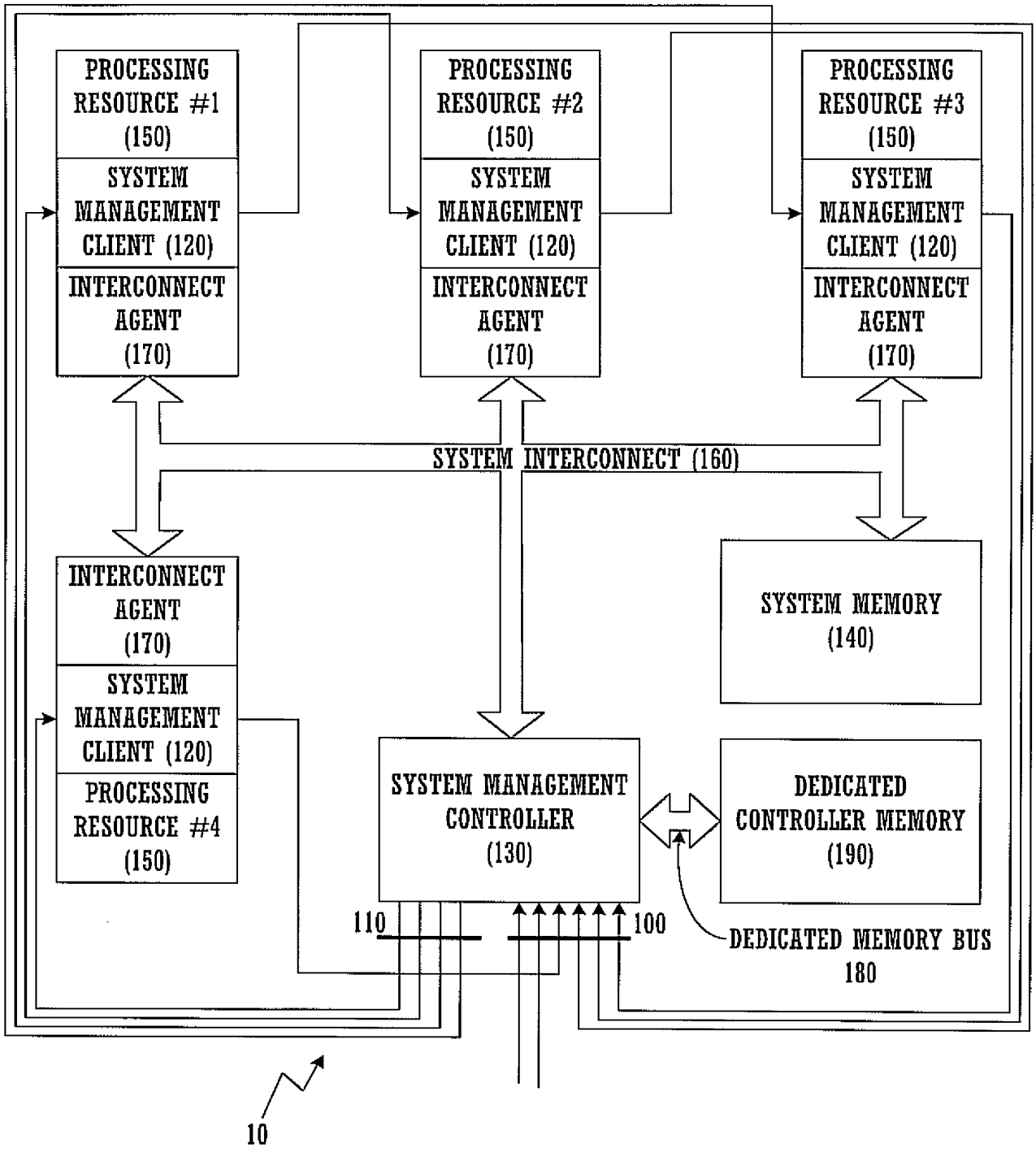
PROCESSING RESOURCE #1 (150)
SYSTEM MANAGEMENT CLIENT (120)
INTERCONNECT AGENT (170)
PROCESSING RESOURCE #2 (150)
SYSTEM MANAGEMENT CLIENT (120)
INTERCONNECT AGENT (170)
PROCESSING RESOURCE #3 (150)
SYSTEM MANAGEMENT CLIENT (120)
INTERCONNECT AGENT (170)
SYSTEM INTERCONNECT (160)
INTERCONNECT AGENT (170)
SYSTEM MANAGEMENT CLIENT (120)
PROCESSING RESOURCE #4 (150)
SYSTEM MEMORY (140)
SYSTEM MANAGEMENT CONTROLLER (130)
DEDICATED CONTROLLER MEMORY (190)
110
100
DEDICATED MEMORY BUS 180
10

FIGURE 2

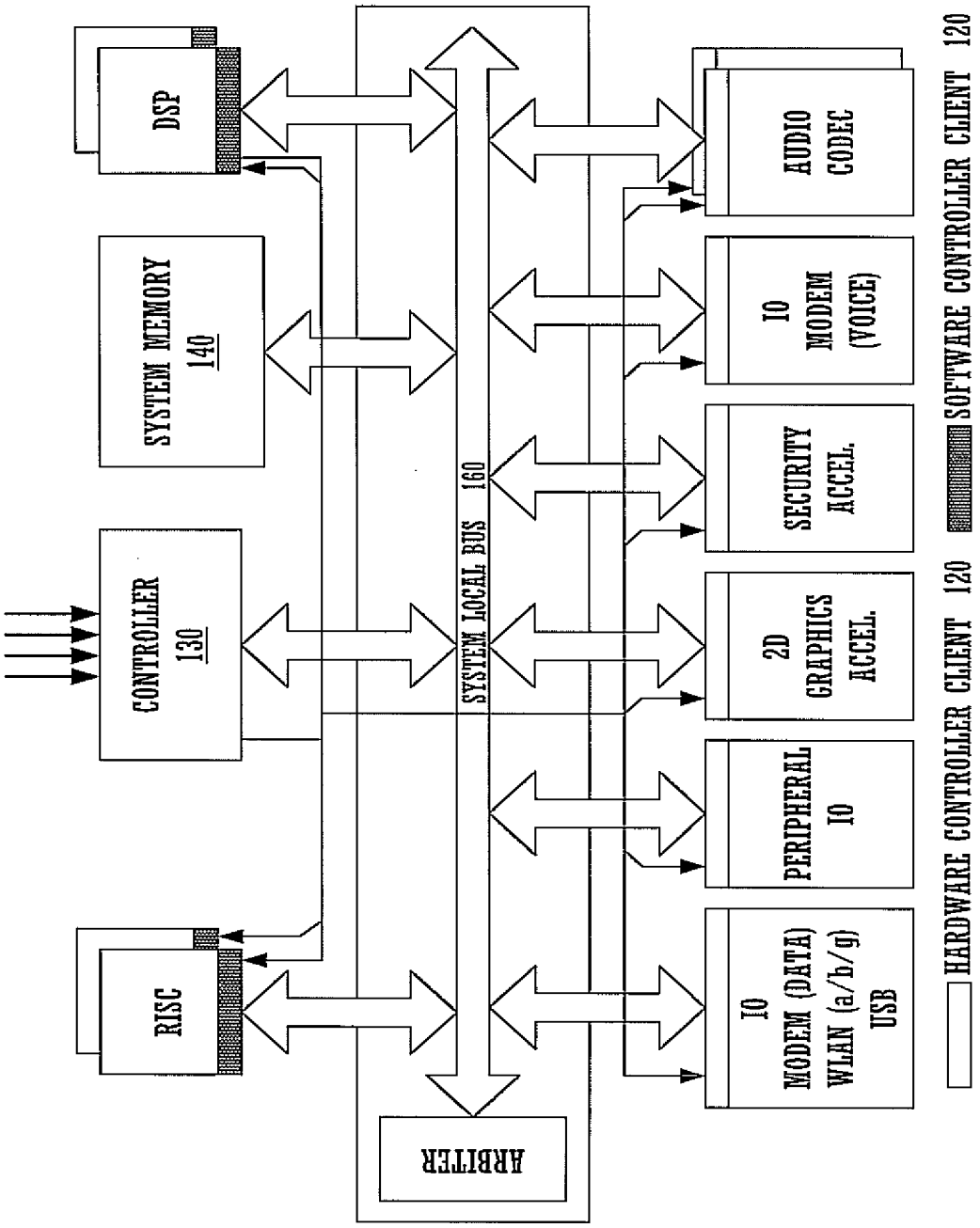
DSP
SYSTEM MEMORY 140
CONTROLLER 130
RISC
ARBITER
SYSTEM LOCAL BUS 160
AUDIO CODEC
IO MODEM (VOICE)
SECURITY ACCEL.
2D GRAPHICS ACCEL.
PERIPHERAL IO
IO MODEM (DATA) WLAN (a/b/g) USB
HARDWARE CONTROLLER CLIENT 120
SOFTWARE CONTROLLER CLIENT 120

FIGURE 3

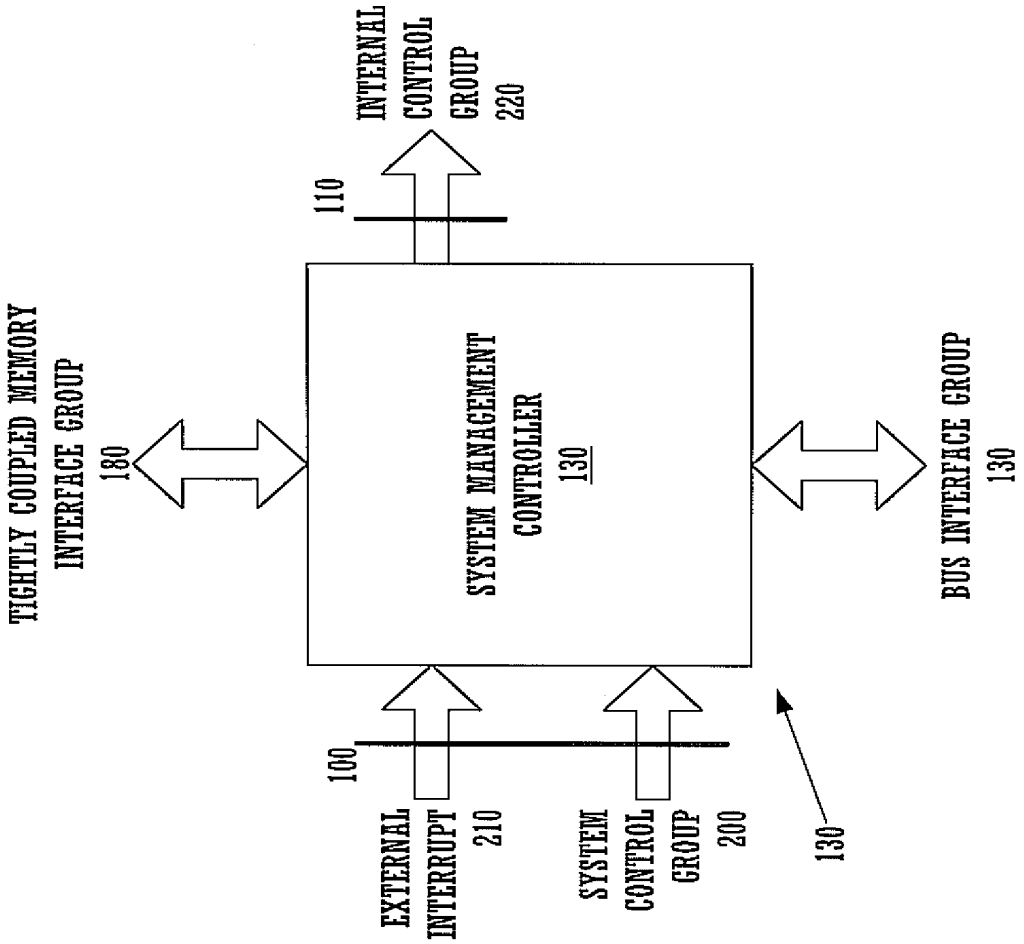
TIGHTLY COUPLED MEMORY INTERFACE GROUP
180
INTERNAL CONTROL GROUP
220
110
SYSTEM MANAGEMENT CONTROLLER
130
BUS INTERFACE GROUP
130
100
EXTERNAL INTERRUPT
210
SYSTEM CONTROL GROUP
200
130

FIGURE 4

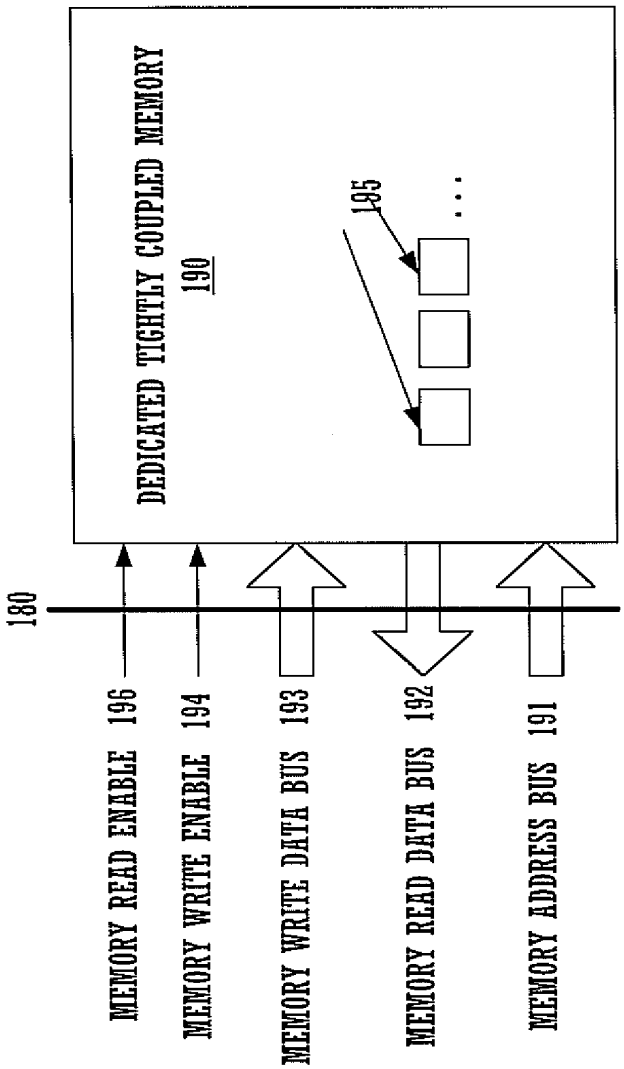
DEDICATED TIGHTLY COUPLED MEMORY
190
195
180
MEMORY READ ENABLE 196
MEMORY WRITE ENABLE 194
MEMORY WRITE DATA BUS 193
MEMORY READ DATA BUS 192
MEMORY ADDRESS BUS 191

FIGURE 5

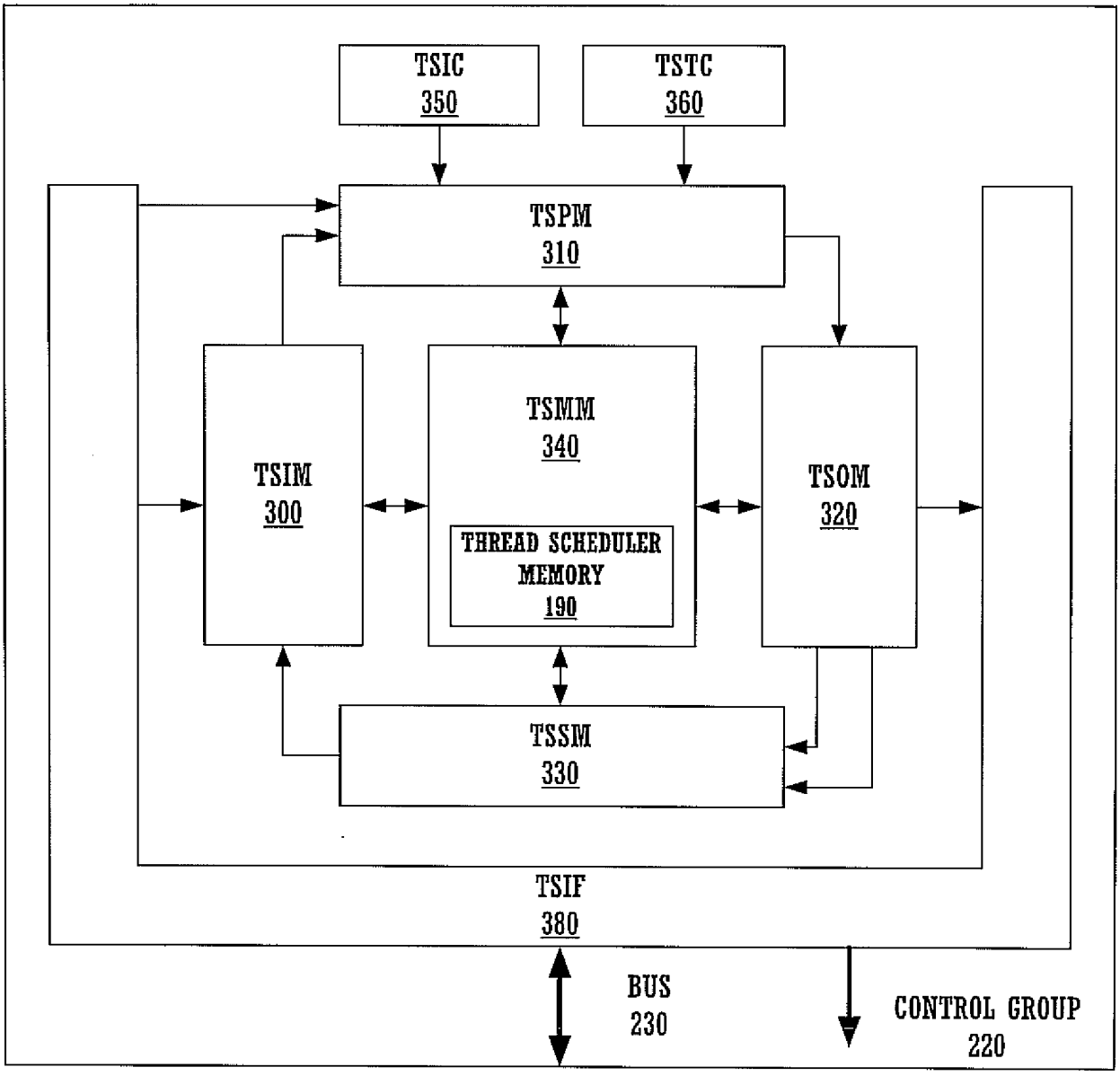
TSIC
350
TSTC
360
TSPM
310
TSIM
300
TSMM
340
THREAD SCHEDULER
MEMORY
190
TSOM
320
TSSM
330
TSIF
380
BUS
230
CONTROL GROUP
220

FIGURE 6

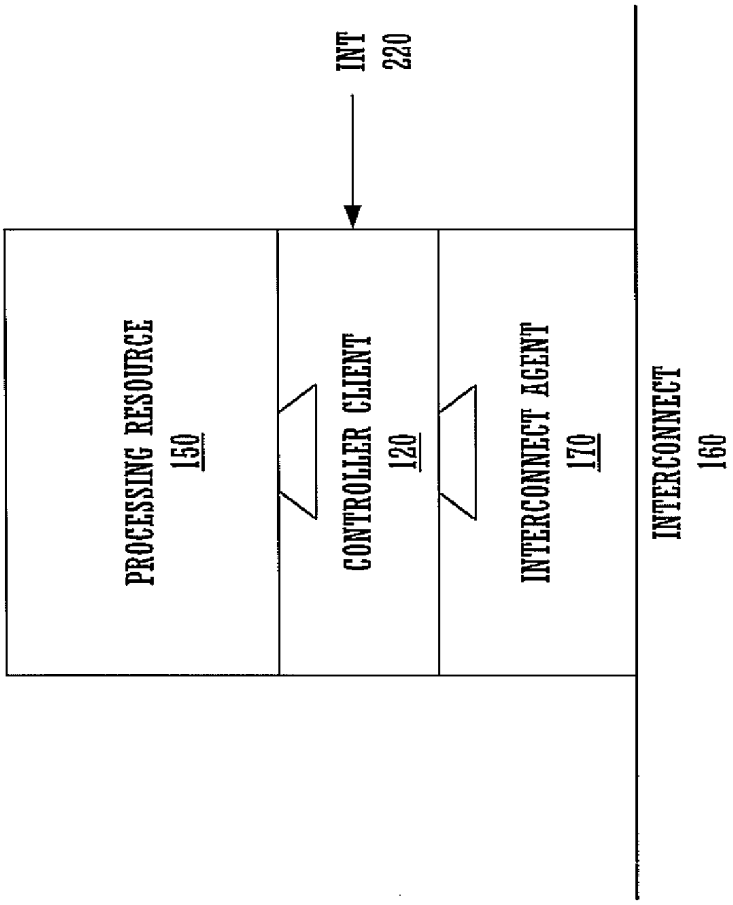
INT
220
PROCESSING RESOURCE
150
CONTROLLER CLIENT
120
INTERCONNECT AGENT
170
INTERCONNECT
160

FIGURE 7

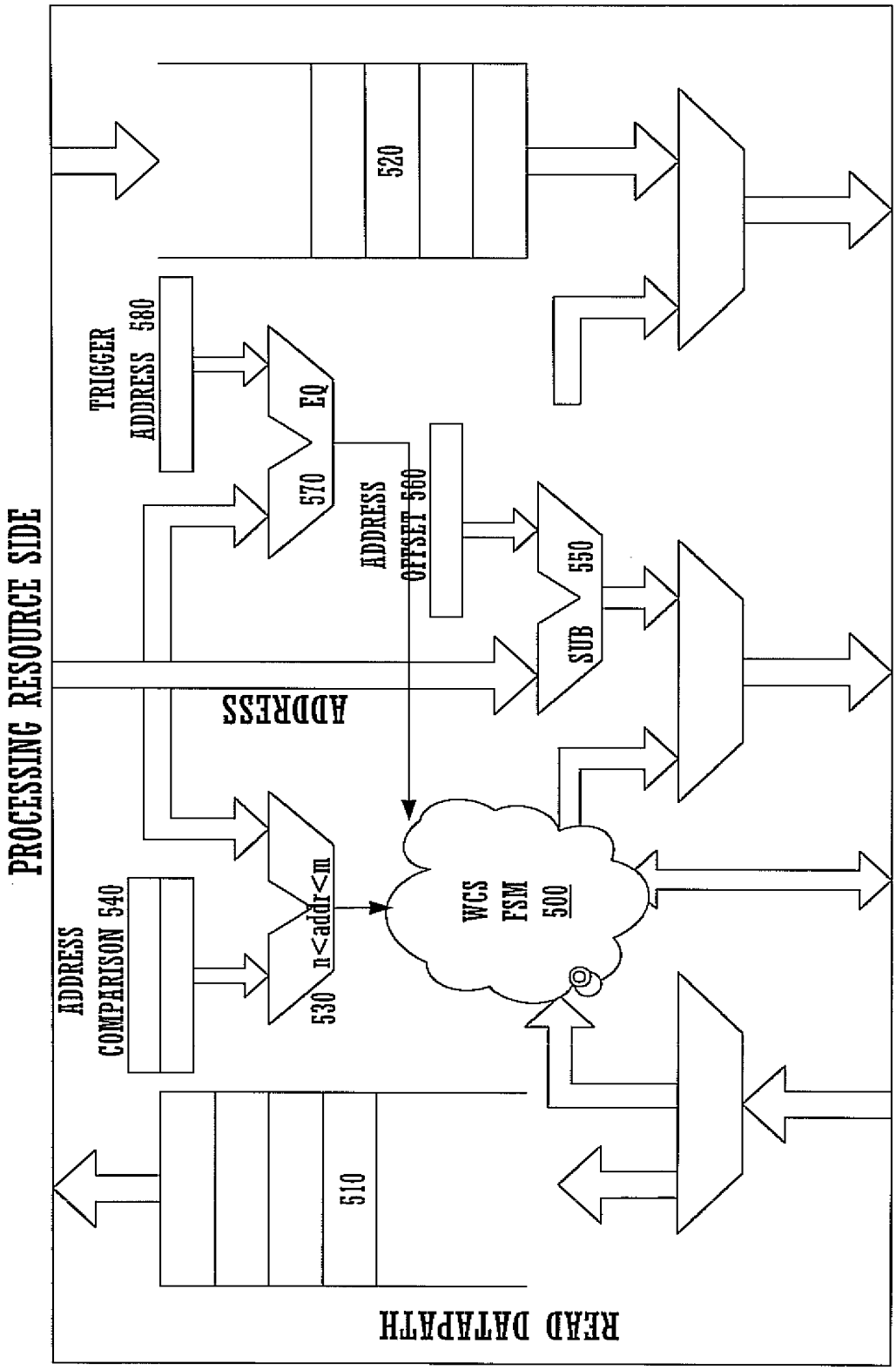
PROCESSING RESOURCE SIDE
SYSTEM SIDE
READ DATAPATH
520
TRIGGER ADDRESS 580
EQ
570
ADDRESS OFFSET 560
SUB
550
ADDRESS
ADDRESS COMPARISON 540
n<addr<m
530
WCS FSM 500
510

FIGURE 8

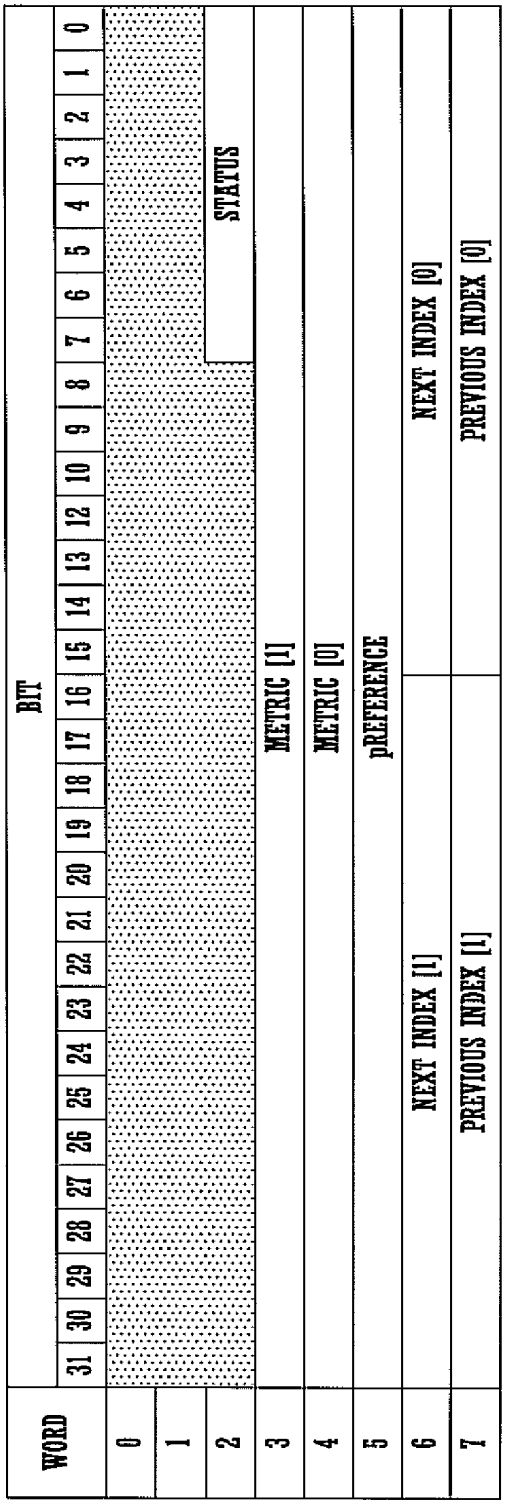
BIT
31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 10 9 8 7 6 5 4 3 2 1 0
WORD
0
1
2
3
4
5
6
7
STATUS
METRIC [1]
METRIC [0]
PREFERENCE
NEXT INDEX [1]
NEXT INDEX [0]
PREVIOUS INDEX [1]
PREVIOUS INDEX [0]

FIGURE 9A

FIELD	TYPE	DESCRIPTION
STATUS.TYPE	UNSIGNED NIBBLE	DETERMINES THE TYPE OF THE WME
STATUS.FLAGS	bool[]	TYPE SPECIFIC WME FLAGS
METRIC[1:0]	UNSIGNED LONG[]	SCHEDULER METRICS
pREFERENCE	(VOID*)	A POINTER TO A THREAD CONTROL BLOCK WITHIN SYSTEM MEMORY
NextIndex[1:0]	UNSIGNED SHORT[]	TWO FORWARD POINTERS FOR AUTONOMOUS LINKED LISTS
PreviousIndex[1:0]	UNSIGNED SHORT[]	TWO BACKWARD POINTERS FOR AUTONOMOUS LINKED LISTS

FIGURE 9B

WORD \ BIT	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	10	9	8	7	6	5	4	3	2	1	0
0	DEPENDENCY REFERENCE																														
1	DEPENDENCY TIMEOUT																														
2	SCHEDULER TIER ID																PENDINGQUEUEID								STATUS						
3	METRIC [1]																														
4	METRIC [0]																														
5	pREFERENCE																														
6	NEXT INDEX [1]																NEXT INDEX [0]														
7	PREVIOUS INDEX [1]																PREVIOUS INDEX [0]														

FIGURE 9C

FIELD	TYPE	DESCRIPTION
DEPENDENCY REFERENCE	(void*)	OPTIONAL POINTER TO A SYNCHRONIZATION PRIMITIVE (MUTEX, SEMAPHORE etc.) UPON WHICH THIS THREAD IS DEPENDENT.
DEPENDENCY TIMEOUT	UNSIGNED LONG	OPTIONAL TIMEOUT FOR SYNCHRONIZATION BASED ON TEMPORAL STATE.
SCHEDULER TIER ID	UNSIGNED SHORT	INDEX OF WEAVER 1 MEMORY ELEMENT CONTAINING THE PARENT SCHEDULER TO WHICH THE SYNCHRONIZATION IS QUEUED.
STATUS.TYPE	UNSIGNED NIBBLE	SET TO 1.
STATUS.FLAGS	bool[]	WORK QUEUE STATUS FLAGS DETERMINING THE FOLLOWING STATUS: 0: PUSHED (THREAD HAS BEEN PUSHED INTO SCHEDULER QUEUE) 1: POPPED (THREAD HAS BEEN POPPED FROM SCHEDULER QUEUE) 2: DISPATCHED (THREAD HAS BEEN DISPATCHED)
METRIC[1:0]	UNSIGNED LONG[]	SCHEDULER METRICS
pREFERENCE	(VOID*)	A POINTER TO A THREAD CONTROL BLOCK WITHIN SYSTEM MEMORY
NextIndex[1:0]	UNSIGNED SHORT[]	TWO FORWARD POINTERS FOR AUTONOMOUS LINKED LISTS
PreviousIndex[1:0]	UNSIGNED SHORT[]	TWO BACKWARD POINTERS FOR AUTONOMOUS LINKED LISTS

FIGURE 9D

WORD \ BIT	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	10	9	8	7	6	5	4	3	2	1	0
0	HEAD INDEX															NUMBER OF ELEMENTS															
1	PARENT INDEX															TOTAL THREAD ELEMENTS															
2	SCHED PUSH OP				SCHED POP OP				METRIC PUSH OP						METRIC POP OP				BUNDLE LIMIT							STATUS				
3	METRIC [1]																														
4	METRIC [0]																														
5	PREFERENCE																														
6	NEXT INDEX [1]															NEXT INDEX [0]															
7	PREVIOUS INDEX [1]															PREVIOUS INDEX [0]															

FIGURE 9E

FIELD	TYPE	DESCRIPTION
HEAD INDEX	UNSIGNED SHORT	THE HEAD INDEX OF THE UNDERLYING QUEUE STRUCTURE.
NUMBER OF ELEMENTS	UNSIGNED SHORT	THE NUMBER OF ELEMENTS IN THE IMMEDIATELY UNDERLYING QUEUE STRUCTURE.
PARENT INDEX	UNSIGNED SHORT	POINTER TO THE PARENT SCHEDULER TIER OR DISPATCH QUEUE.
TOTAL THREAD ELEMENTS	UNSIGNED SHORT	THE TOTAL NUMBER OF THREAD ELEMENTS IN THE UNDERLYING QUEUE STRUCTURE (i.e. EXCLUDING SCHEDULER TIERS)
SCHEDULER PUSH OPERATOR	UNSIGNED CHAR	OPERATOR TO BE EXECUTED WHEN A THREAD IS PUSHED ONTO THE SCHEDULER TIER.
SCHEDULER POP OPERATOR	UNSIGNED CHAR	OPERATOR TO BE EXECUTED WHEN A THREAD IS POPPED FROM THE SCHEDULER TIER.
METRIC PUSH OPERATOR	UNSIGNED CHAR	SCHEDULER METRIC PROPAGATION OPERATOR FOR EXECUTION WHEN A THREAD IS PUSHED ONTO THE SCHEDULER TIER.
METRIC POP OPERATOR	UNSIGNED CHAR	SCHEDULER METRIC PROPAGATION OPERATOR FOR EXECUTION WHEN A THREAD IS POPPED FROM THE SCHEDULER TIER.
PARENT INDEX	UNSIGNED SHORT	POINTER TO THE PARENT SCHEDULER TIER OR DISPATCH QUEUE
BUNDLE LIMIT	UNSIGNED CHAR	INDEX OF WEAVER 1 MEMORY ELEMENT CONTAINING THE PARENT SCHEDULER TO WHICH THE SYNCHRONIZATION IS QUEUED.
STATUS.TYPE	UNSIGNED NIBBLE	SET TO: 2: DYNAMIC SCHEDULER TIER 3: LOCKED DYNAMIC SCHEDULER TIER 4: STATIC SCHEDULER TIER 5: ROOT SCHEDULER TIER
STATUS.FLAGS	bool[]	UNUSED
METRIC[1:0]	UNSIGNED LONG[]	SCHEDULER METRICS
pREFERENCE	(VOID*)	USED WITHIN DYNAMIC SCHEDULER TIERS TO IDENTIFY THE FINAL THREAD ELEMENT OF THE TIER.
PreviosIndex[1] NextIndex[1:0]	UNSIGNED SHORT[]	SUB-BLOCK WORK QUEUE LIST POINTERS.
PreviousIndex[1:0] NextIndex[0]	UNSIGNED SHORT[]	DUAL ATTACHED LINKED LIST FOR SCHEDULER PEERS.

FIGURE 9F

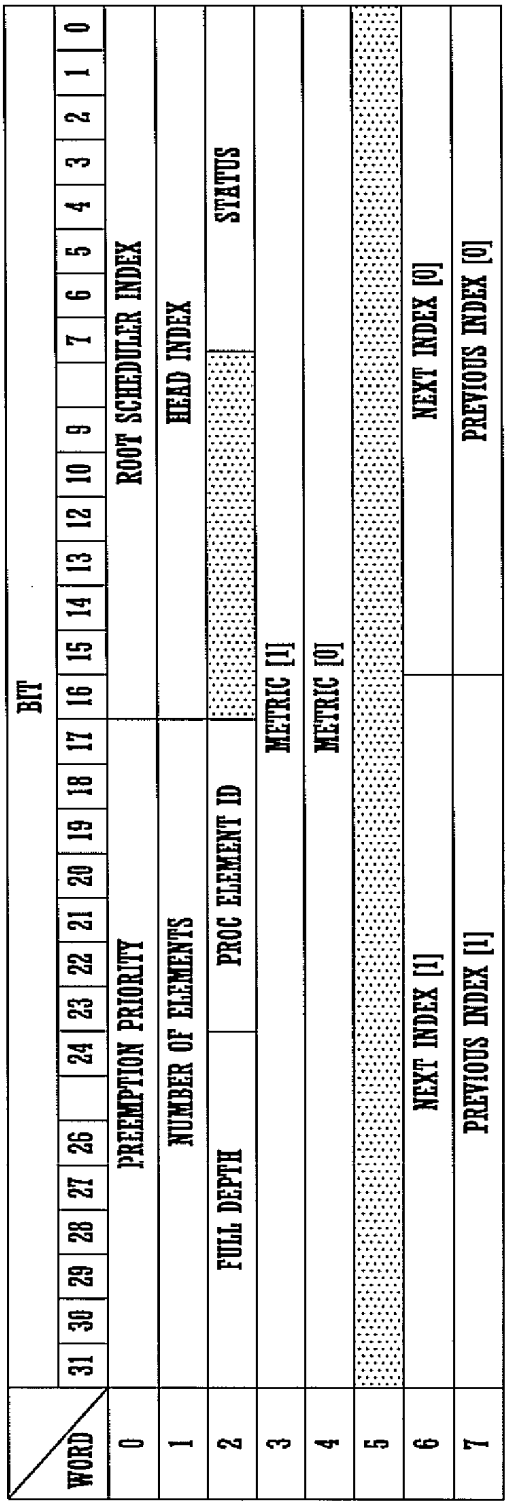
WORD
BIT
31 30 29 28 27 26 24 23 22 21 20 19 18 17 16 15 14 13 12 10 9 7 6 5 4 3 2 1 0
0
PREEMPTION PRIORITY
ROOT SCHEDULER INDEX
1
NUMBER OF ELEMENTS
HEAD INDEX
2
FULL DEPTH
PROC ELEMENT ID
STATUS
3
METRIC [1]
4
METRIC [0]
5
6
NEXT INDEX [1]
NEXT INDEX [0]
7
PREVIOUS INDEX [1]
PREVIOUS INDEX [0]

FIGURE 9G

FIELD	TYPE	DESCRIPTION
PREEMPTION PRIORITY	UNSIGNED SHORT	PRIORITY OF THE CURRENTLY EXECUTING THREAD. USED TO AVOID PRIORITY INVERSION.
ROOT SCHEDULER INDEX	UNSIGNED SHORT	INDEX OF THE MEMORY ELEMENT CONTAINING THE ROOT SCHEDULER AT THE HEAD OF THE SCHEDULING CONE FOR THIS RESOURCE.
NUMBER OF ELEMENTS	UNSIGNED SHORT	THE NUMBER OF THREAD ELEMENTS CURRENTLY HELD WITHIN THE DISPATCH QUEUE.
HEAD INDEX	UNSIGNED SHORT	THE HEAD INDEX OF THE DISPATCH QUEUE.
STATUS.TYPE	UNSIGNED NIBBLE	SET TO 6.
STATUS.FLAGS	bool[]	WORK QUEUE STATUS FLAGS.
METRIC[1]	UNSIGNED LONG	POWER DOWN ELIGIBILITY COUNTER.
METRIC[0]	UNSIGNED LONG	POWER DOWN ELIGIBILITY THRESHOLDS.
PreviousIndex[1] NextIndex[1]	UNSIGNED SHORT[]	SUB-BLOCK WORK QUEUE LIST POINTERS.
PreviousIndex[0] NextIndex[0]	UNSIGNED SHORT[]	INTER DISPATCH QUEUE LIST POINTERS.

FIGURE 9H

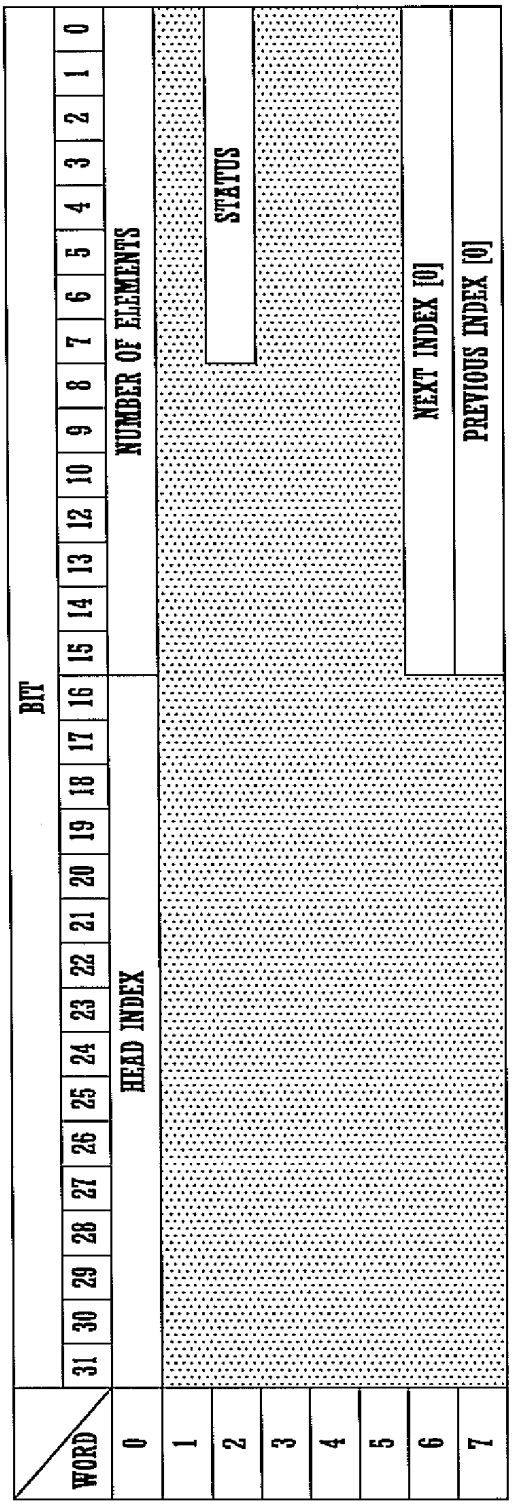
BIT
31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 10 9 8 7 6 5 4 3 2 1 0
WORD
0
1
2
3
4
5
6
7
HEAD INDEX
NUMBER OF ELEMENTS
STATUS
NEXT INDEX [0]
PREVIOUS INDEX [0]

FIGURE 9I

FIELD	TYPE	DESCRIPTION
HEAD INDEX	UNSIGNED SHORT	POINTER TO THE HEAD INDEX OF THE PENDING LIST.
NUMBER OF ELEMENTS	UNSIGNED SHORT	NUMBER OF PENDING LIST ELEMENTS.
STATUS.TYPE	UNSIGNED NIBBLE	SET TO 7.
STATUS.FLAGS	bool[]	UNUSED
PreviousIndex[0] NextIndex[0]	UNSIGNED SHORT[]	INTER PENDING QUEUE LIST POINERS.

FIGURE 9J

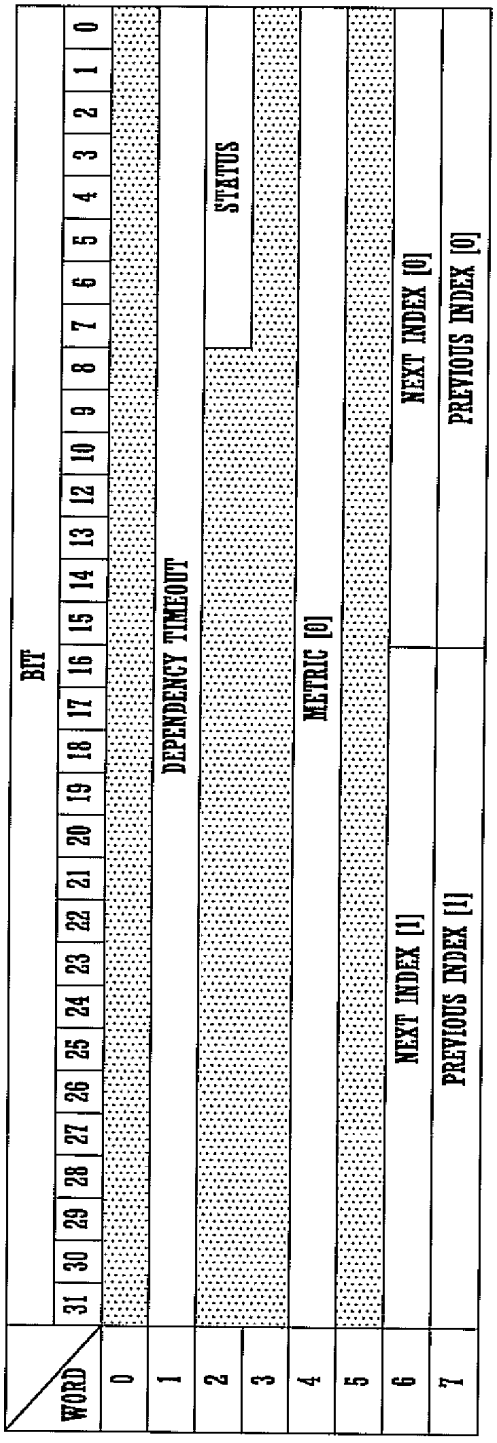
BIT
31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 10 9 8 7 6 5 4 3 2 1 0
WORD
0
1
2
3
4
5
6
7
DEPENDENCY TIMEOUT
STATUS
METRIC [0]
NEXT INDEX [1]
NEXT INDEX [0]
PREVIOUS INDEX [1]
PREVIOUS INDEX [0]

FIGURE 9K

FIELD	TYPE	DESCRIPTION
DEPENDENCY TIMEOUT	UNSIGNED LONG	TIMEOUT FOR COMPARISON WITH THE THREAD CURRENTLY BEING INSERTED
TYPE	UNSIGNED CHAR	SET TO 8.
FLAGS	bool[]	UNUSED
METRIC[1:0]	UNSIGNED LONG[]	SCHEDULER METRICS
NextIndex[1:0]	UNSIGNED SHORT[]	TWO FORWARD POINTERS FOR AUTONOMOUS LINKED LISTS.
PreviousIndex[0]	UNSIGNED SHORT[]	TWO BACKWARD POINTERS FOR AUTONOMOUS LINKED LISTS.

FIGURE 9L

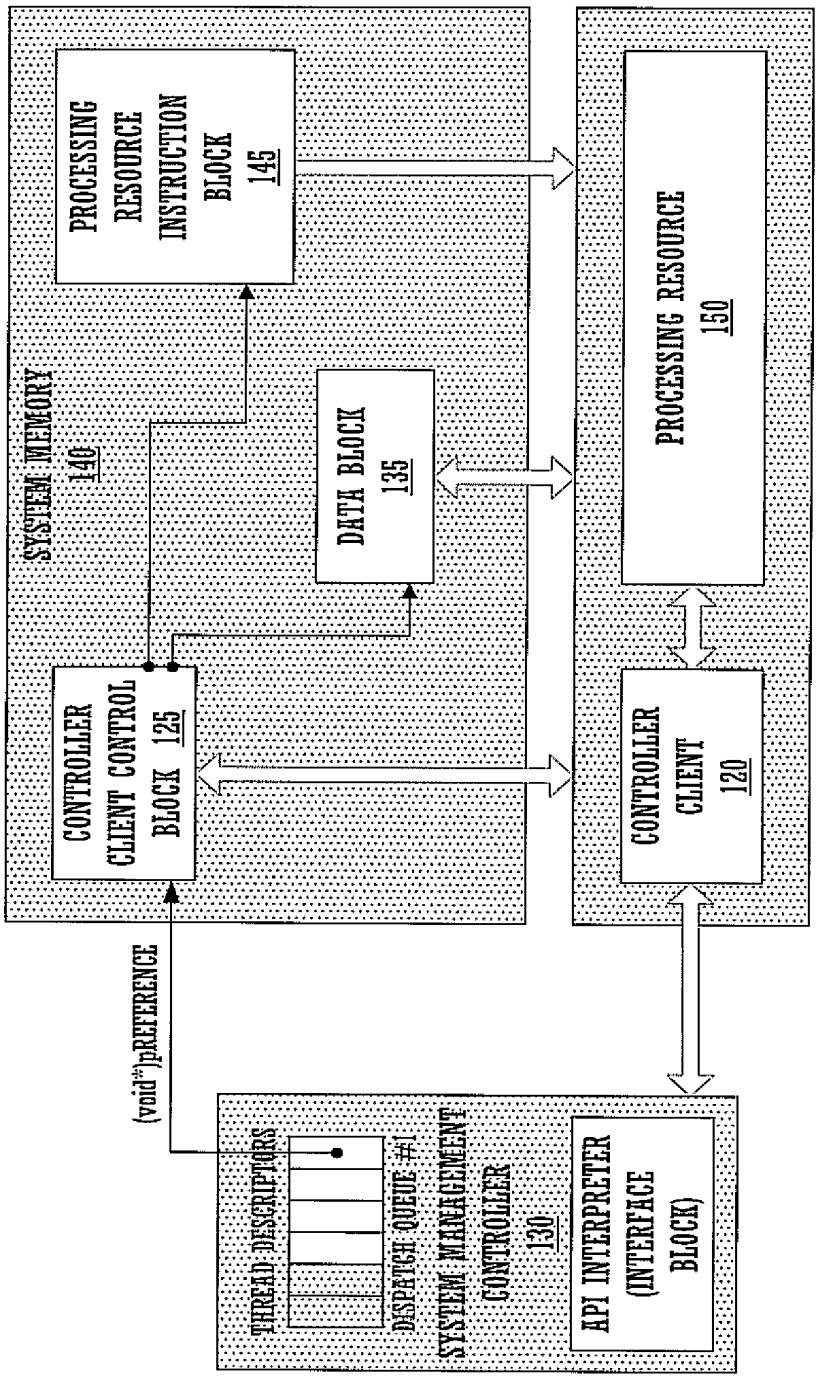
SYSTEM MEMORY 140
PROCESSING RESOURCE INSTRUCTION BLOCK 145
DATA BLOCK 135
CONTROLLER CLIENT CONTROL BLOCK 125
PROCESSING RESOURCE 150
CONTROLLER CLIENT 120
(void*)pREFERENCE
THREAD DESCRIPTORS
DISPATCH QUEUE #1
SYSTEM MANAGEMENT CONTROLLER 130
API INTERPRETER (INTERFACE BLOCK)

FIGURE 10

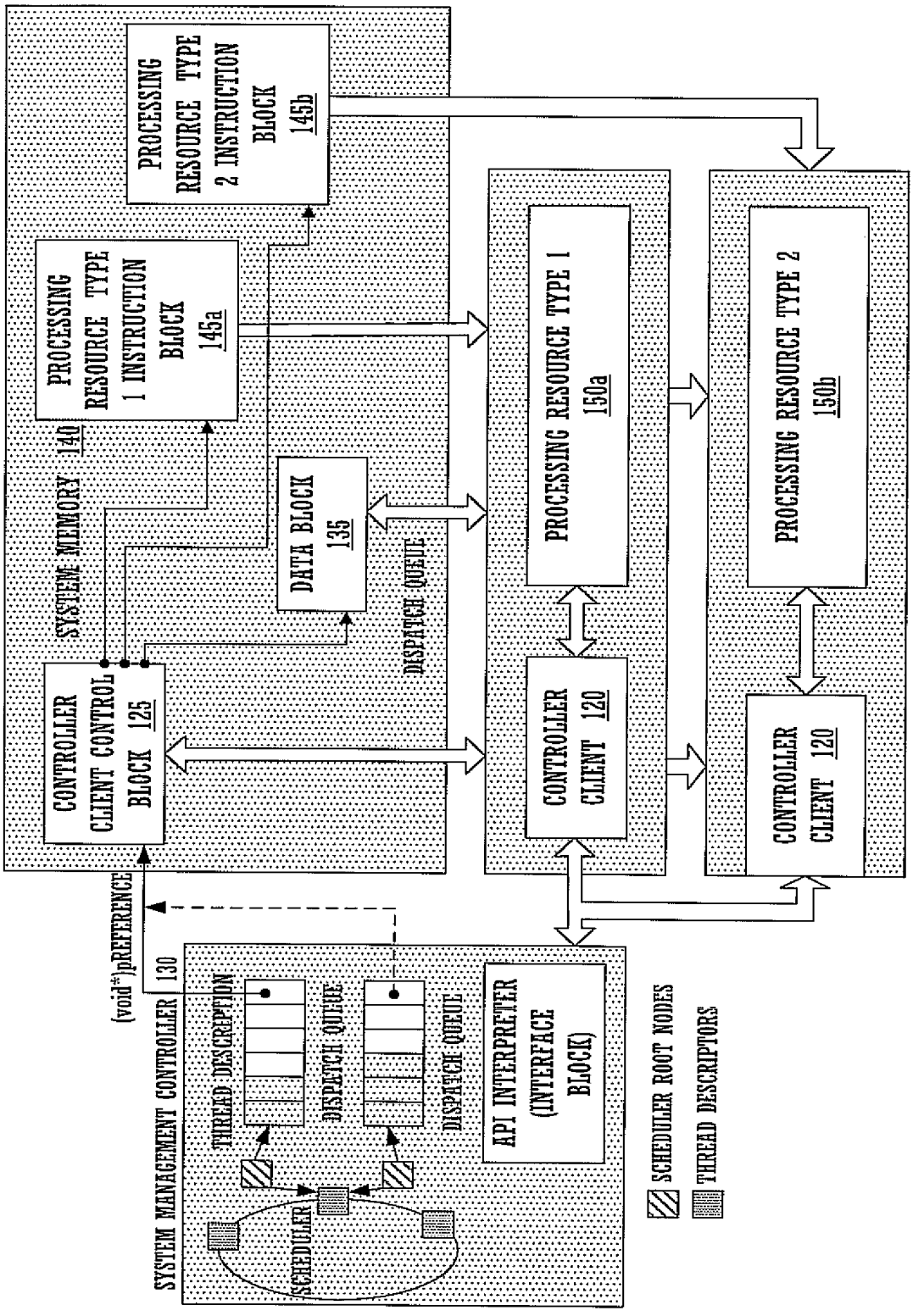
PROCESSING RESOURCE TYPE 2 INSTRUCTION BLOCK 145b
PROCESSING RESOURCE TYPE 1 INSTRUCTION BLOCK 145a
SYSTEM MEMORY 140
DATA BLOCK 135
DISPATCH QUEUE
CONTROLLER CLIENT CONTROL BLOCK 125
PROCESSING RESOURCE TYPE 1 150a
PROCESSING RESOURCE TYPE 2 150b
CONTROLLER CLIENT 120
CONTROLLER CLIENT 120
(void*)pREFERENCE
SYSTEM MANAGEMENT CONTROLLER 130
THREAD DESCRIPTION
DISPATCH QUEUE
DISPATCH QUEUE
API INTERPRETER (INTERFACE BLOCK)
SCHEDULER
SCHEDULER ROOT NODES
THREAD DESCRIPTORS

FIGURE 11

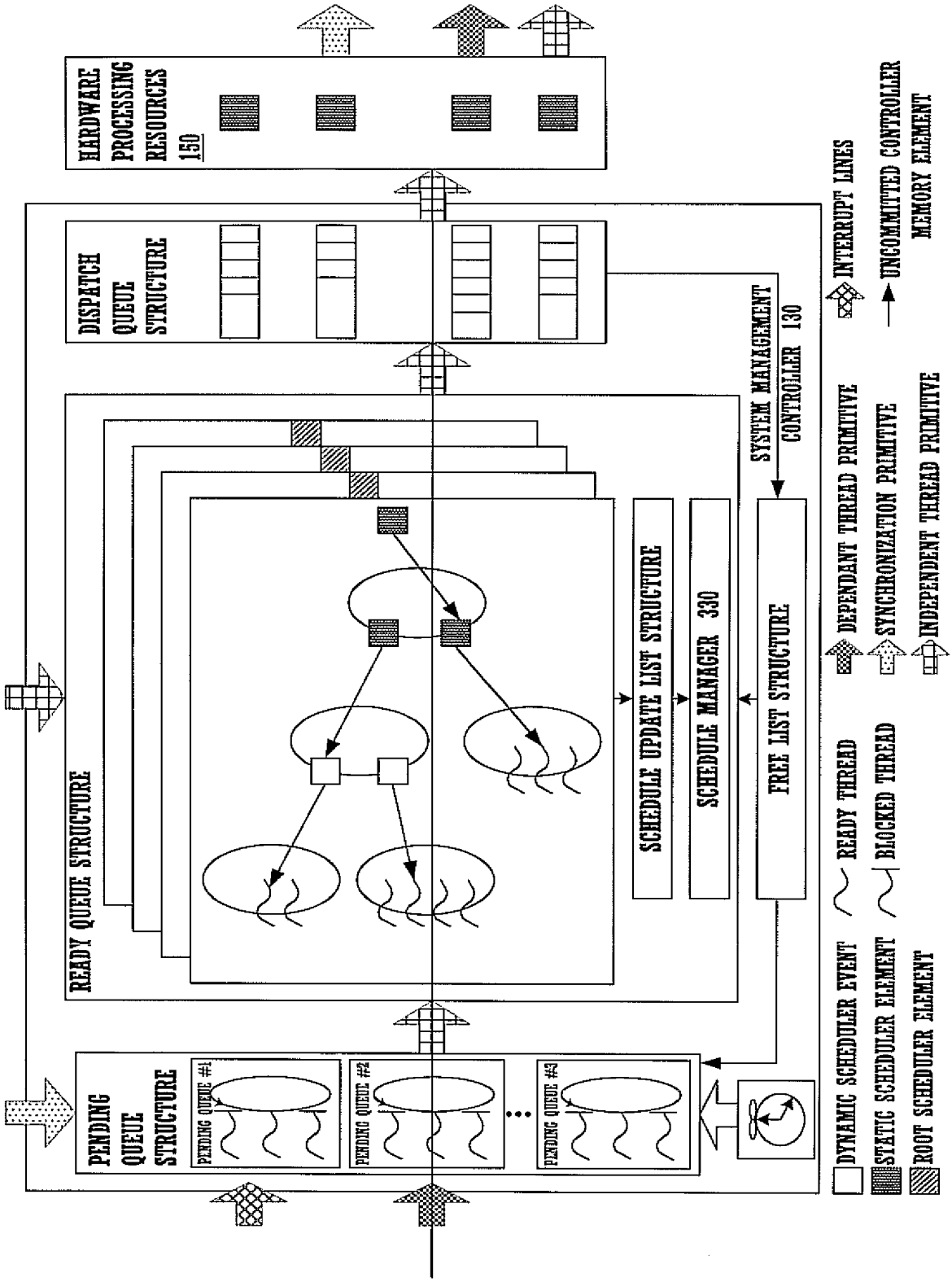
HARDWARE PROCESSING RESOURCES 150
DISPATCH QUEUE STRUCTURE
READY QUEUE STRUCTURE
PENDING QUEUE STRUCTURE
PENDING QUEUE #1
PENDING QUEUE #2
PENDING QUEUE #3
SCHEDULE UPDATE LIST STRUCTURE
SCHEDULE MANAGER 330
FREE LIST STRUCTURE
SYSTEM MANAGEMENT CONTROLLER 130
INTERRUPT LINES
UNCOMMITTED CONTROLLER MEMORY ELEMENT
DEPENDANT THREAD PRIMITIVE
SYNCHRONIZATION PRIMITIVE
INDEPENDENT THREAD PRIMITIVE
DYNAMIC SCHEDULER EVENT
READY THREAD
STATIC SCHEDULER ELEMENT
BLOCKED THREAD
ROOT SCHEDULER ELEMENT

FIGURE 12

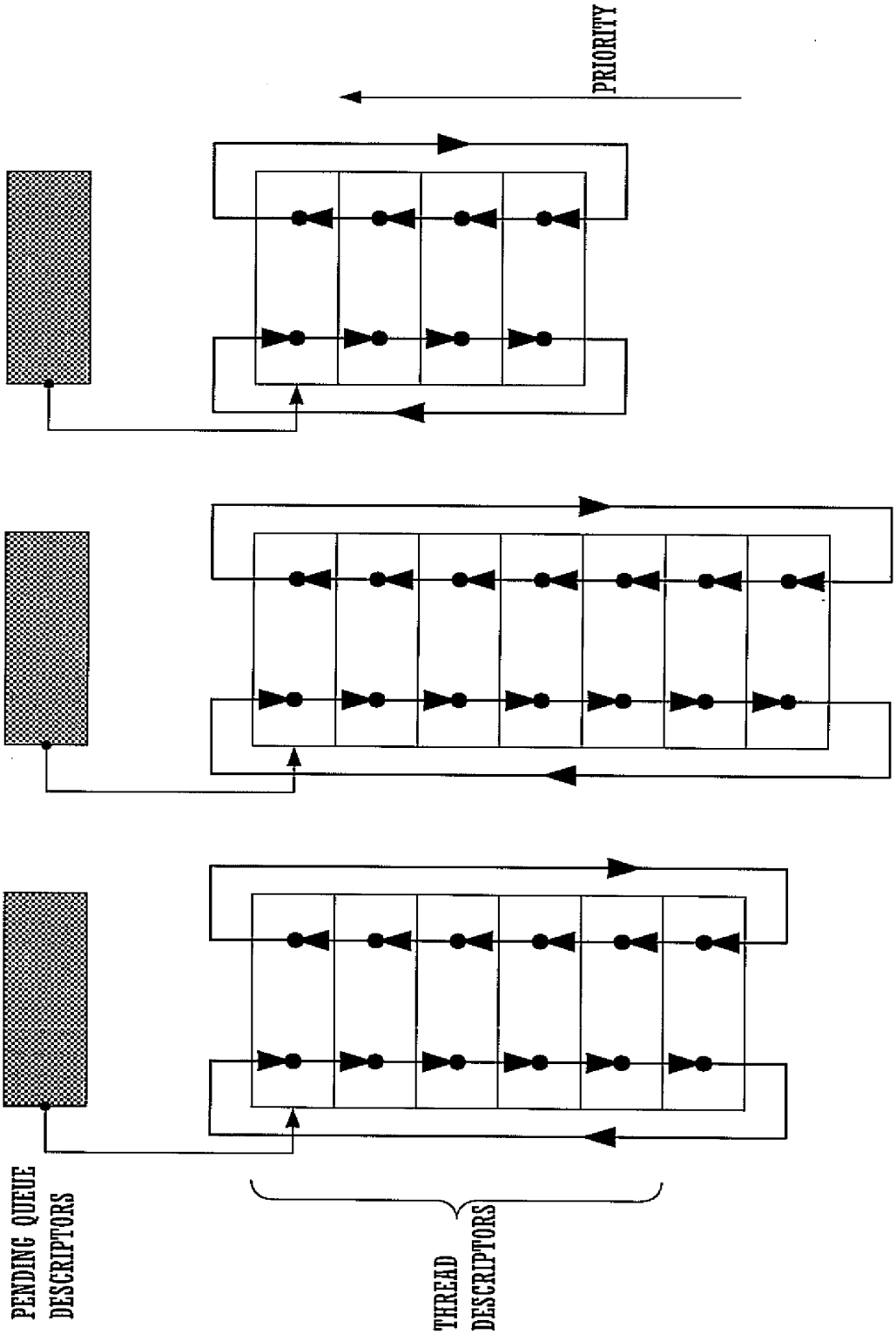

FIGURE 13

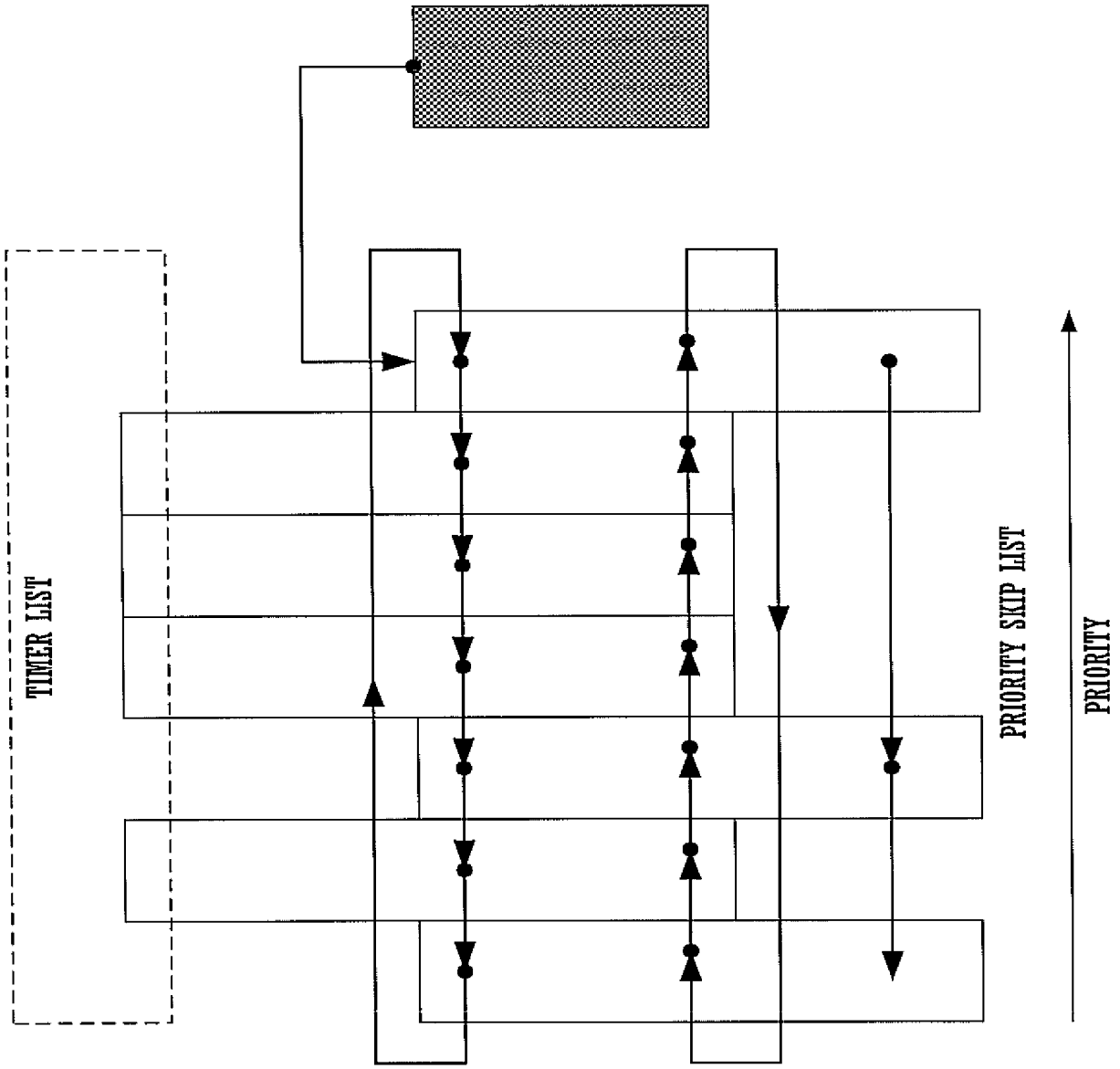

FIGURE 14

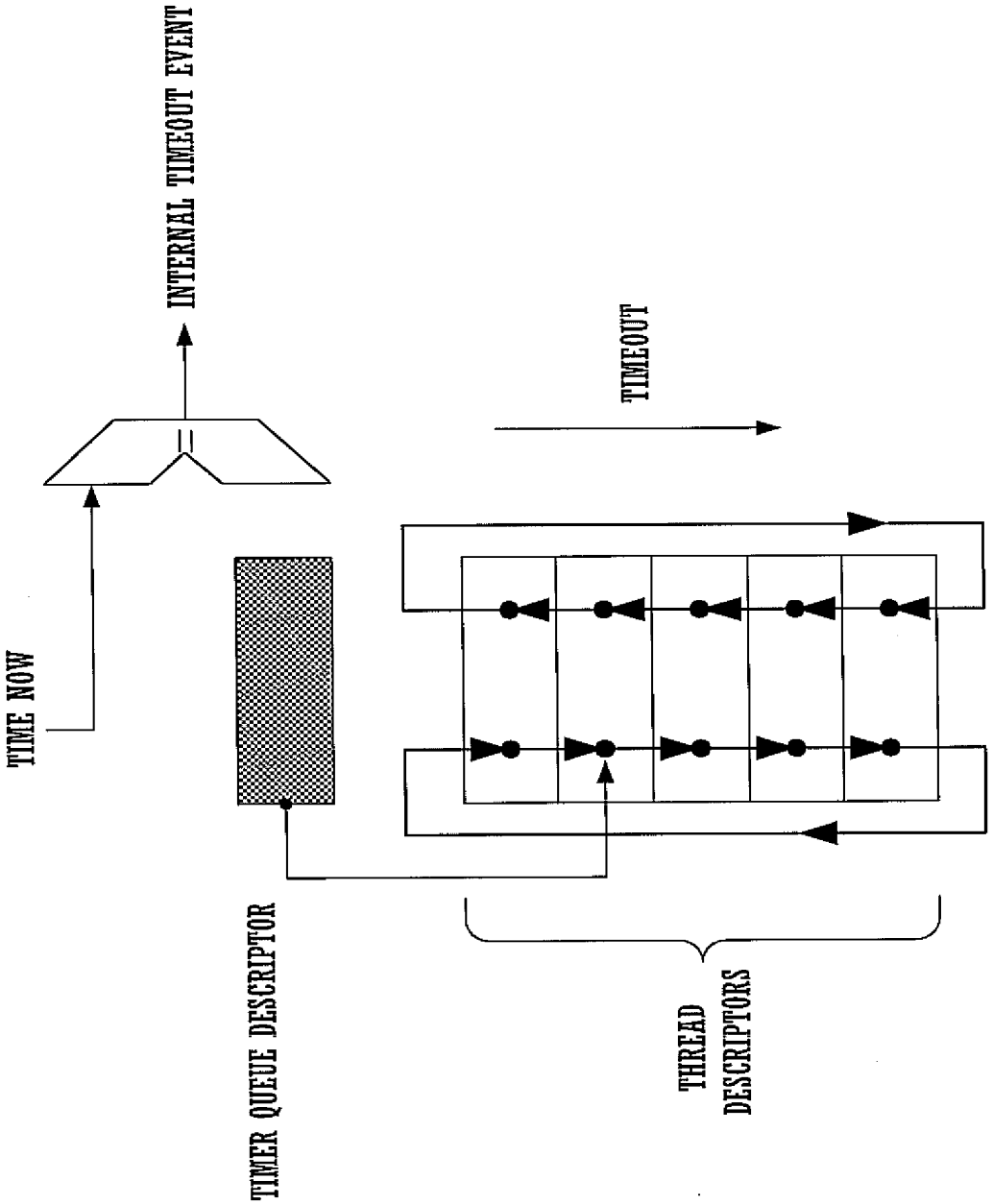
INTERNAL TIMEOUT EVENT
TIMEOUT
TIME NOW
TIMER QUEUE DESCRIPTOR
THREAD DESCRIPTORS

FIGURE 15

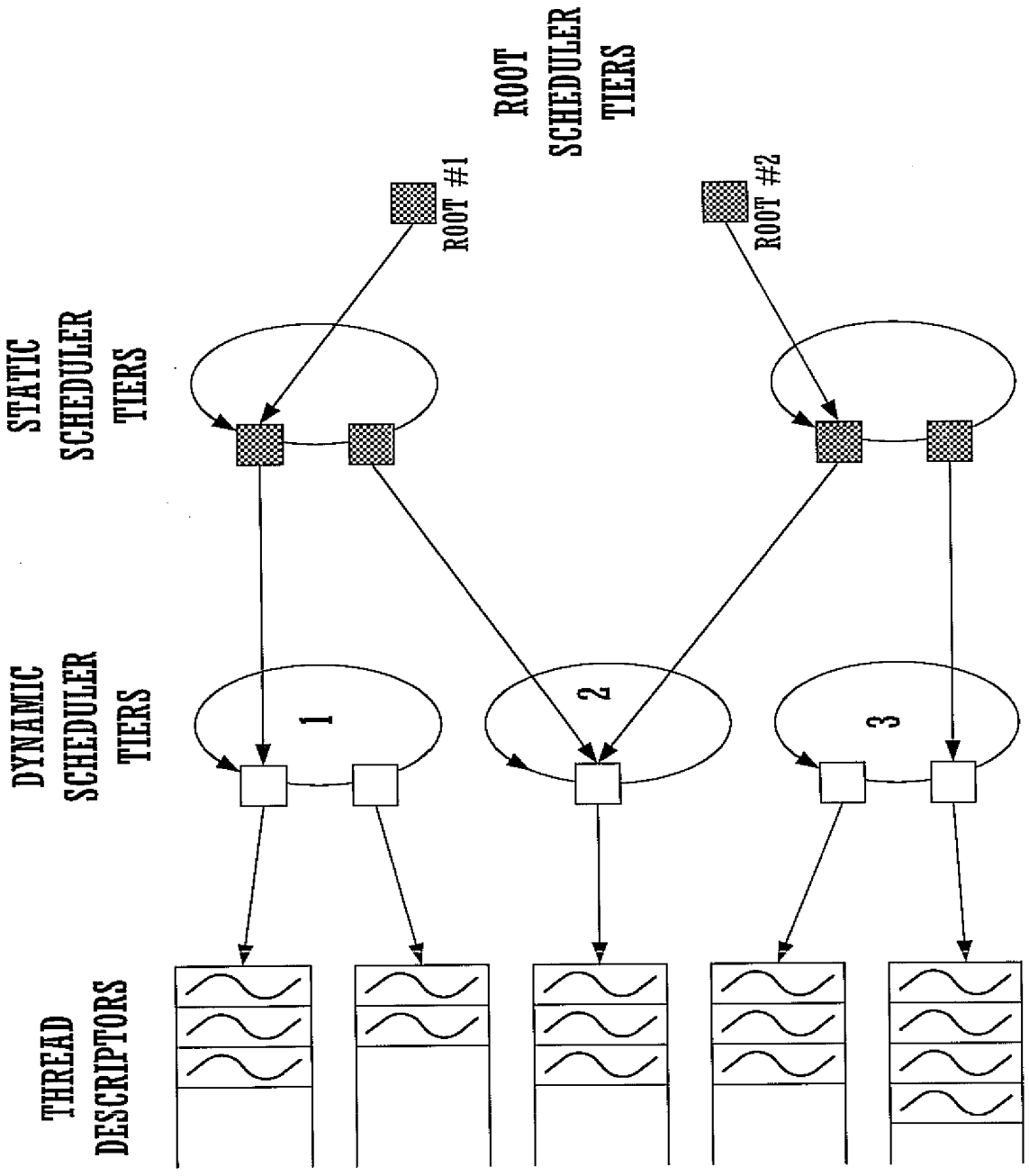
ROOT SCHEDULER TIERS
ROOT #1
ROOT #2
STATIC SCHEDULER TIERS
DYNAMIC SCHEDULER TIERS
1
2
3
THREAD DESCRIPTORS

FIGURE 16

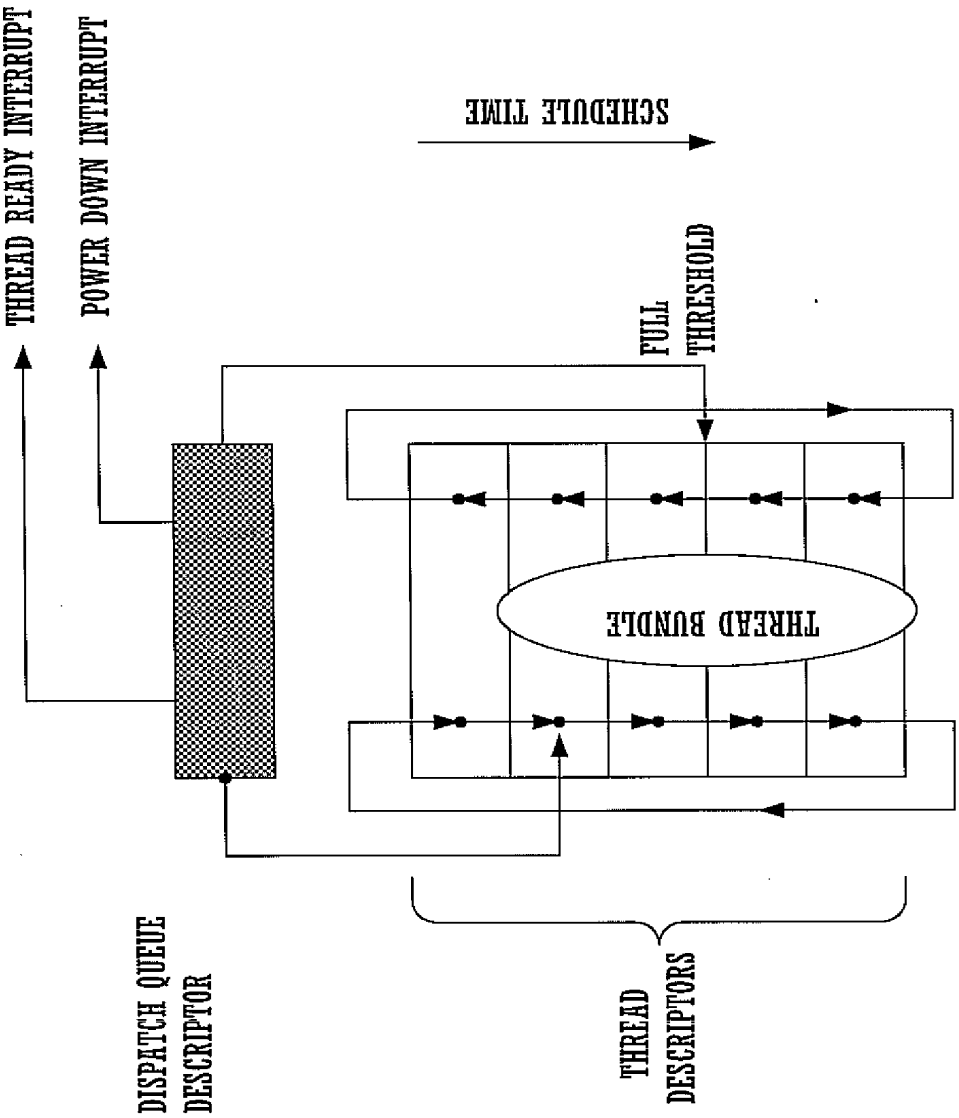
THREAD READY INTERRUPT
POWER DOWN INTERRUPT
SCHEDULE TIME
FULL THRESHOLD
THREAD BUNDLE
DISPATCH QUEUE DESCRIPTOR
THREAD DESCRIPTORS

FIGURE 17

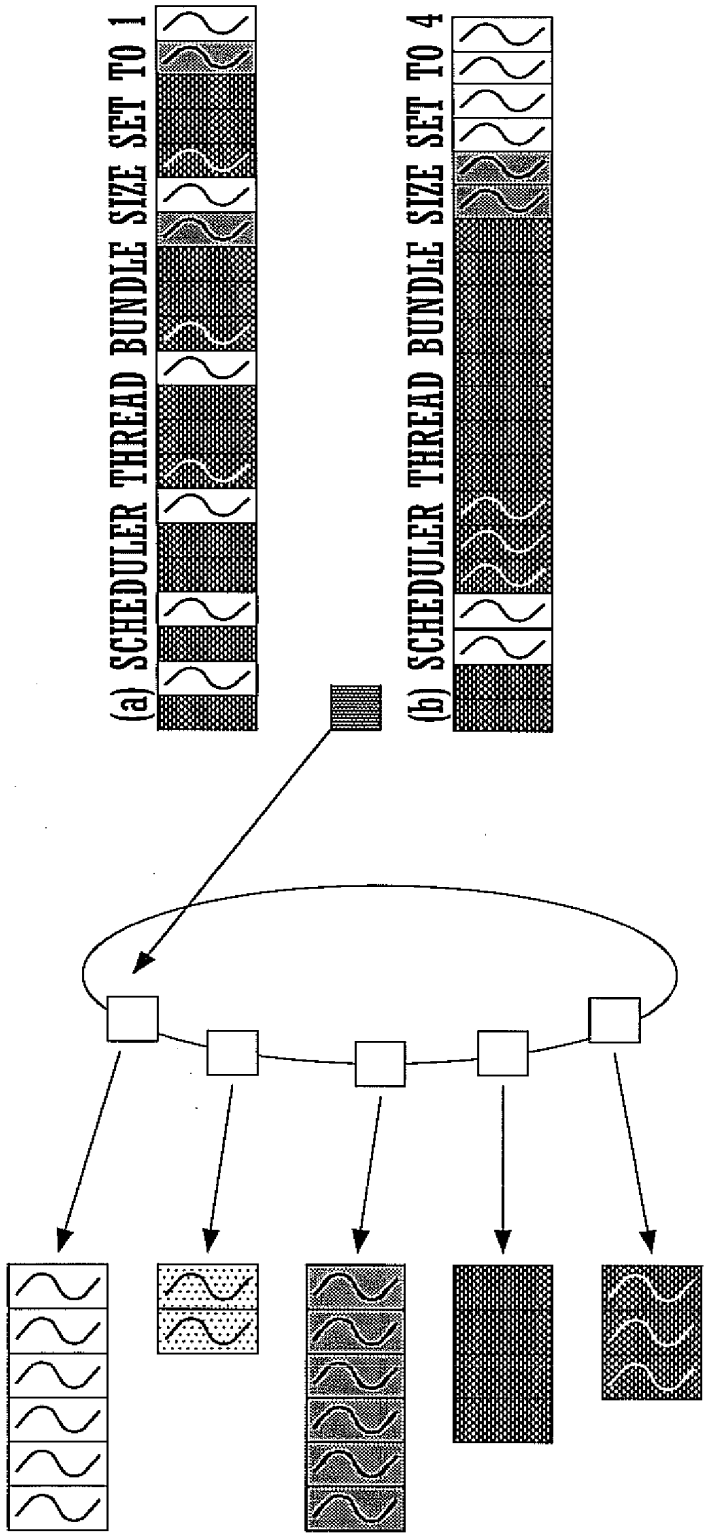
(a) SCHEDULER THREAD BUNDLE SIZE SET TO 1
(b) SCHEDULER THREAD BUNDLE SIZE SET TO 4

FIGURE 18

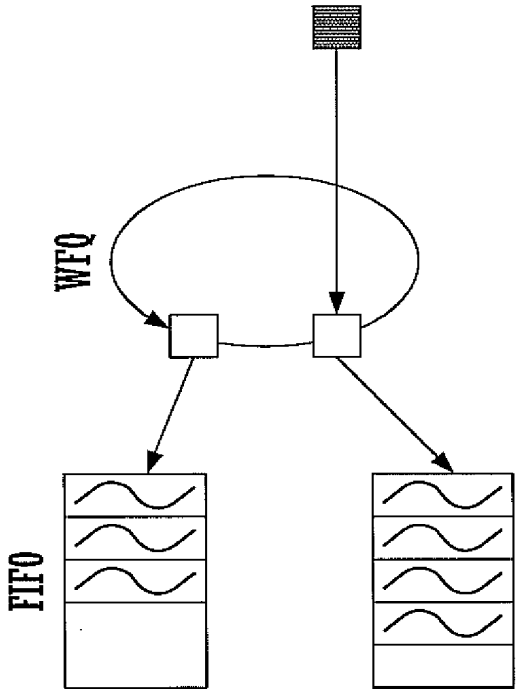

FIGURE 19